

MULTIMEDIA



UNIVERSITY

STUDENT IDENTIFICATION NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2019/2020

TSI2241 SYSTEM INTEGRATION AND ARCHITECTURE

(All Sections / Groups)

28 FEBRUARY 2020

3.00pm – 5.00pm

(2 Hours)

INSTRUCTION TO STUDENTS

1. This paper consists of 6 pages with **FIVE (5)** questions only.
2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answers in the answer booklet provided.

QUESTION 1

- a) *Mycroft owns a small software house and specializes in developing hotel booking systems. They have vast experience on web and mobile platforms. Ms Koh approaches Mycroft to develop a mobile booking system for her homestay business. She has eight houses all over Melaka state and currently only manages booking through phone calls.*

Based on the above scenario, would you recommend a *predictive model* or an *adaptive model*? Justify your answer with TWO (2) supportive statements.

(4 marks)

- b) *In order to properly complete the group project for TSI2241, students should hand draw the diagrams before using draw.io. The use case diagram should be designed first. Then the activity diagram/s, the class diagram and the state machine diagram can be designed at the same time. Once all diagrams are done, finalise the diagrams using draw.io. After completing each diagram, there should be a review. If the diagram has no mistakes, then end the review. If the diagram has mistakes, then modify the diagram accordingly. The diagram can only end review if there are no more mistakes.*

Based on the above scenario, draw the appropriate UML diagram/s.

(4 marks)

- c) *User requirements may be grouped into functional requirements and non-functional requirements.*

Provide TWO (2) *non-functional requirements* for a *subject registration system*.

(2 marks)

Continued...

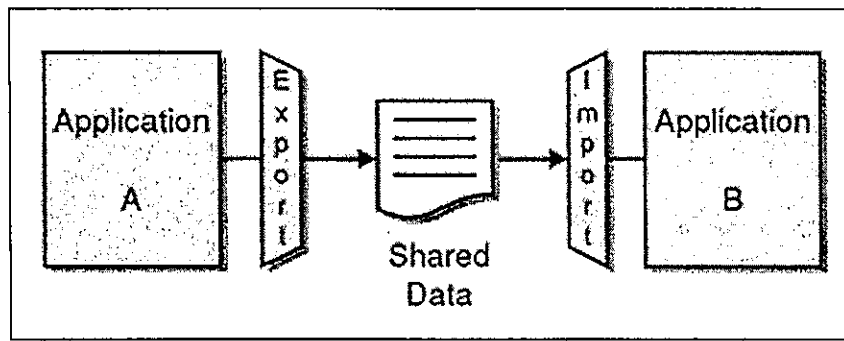
QUESTION 2

- a) *Horizontal application* is a software that can be used by many different types of organizations while *vertical application* is a software that can handle information requirements for a specific type of business.

Justify which would you build and which would you buy.

(4 marks)

b)



Explain the *integration style* depicted in the diagram above.

(2 marks)

- c) A group of students did not manage to plan their time properly and only completed the programming assignment a day before submission due date. So the amount of time the students have for testing is limited.

Describe TWO (2) *testing principles* that the students should follow:

(4 marks)

Continued...

QUESTION 3

- a) The company you work at, Baker Street Sdn Bhd, is planning to outsource the porting of your IT systems to a mobile platform. TWO (2) proposals have been submitted from different vendors. As the IT manager, you need to evaluate both proposals so that you can suggest which the best project is for Baker Street Sdn Bhd.

1st proposal

Discount rate

9%

	Year				
	0	1	2	3	Total
Costs	95,000	25,000	18,000	15,000	
Discount factor					
Discounted costs					
Benefits	-	75,000	75,000	75,000	
Discount factor					
Discounted benefits					
Discounted (benefits-costs)					
Cummulative (benefits-costs)					

2nd proposal

Discount rate

9%

	Year				
	0	1	2	3	Total
Costs	30,000	30,000	30,000	30,000	
Discount factor					
Discounted costs					
Benefits	-	58,000	45,000	40,000	
Discount factor					
Discounted benefits					
Discounted (benefits-costs)					
Cummulative (benefits-costs)					

Continued...

- i) Calculate the NPV, ROI and payback period (in months) for the 1st proposal.
(3 marks)
 - ii) Calculate the NPV, ROI and payback period (in months) for the 2nd proposal.
(3 marks)
 - iii) Justify which project the company should invest in.
(2 marks)
- b) State TWO (2) ideas particularly useful in understanding the process of *change* and defining *change management*.
(2 marks)

Continued...

QUESTION 4

- a) When doing project estimation, one of the decomposition techniques used to measure software size is an indirect approach using *function points* (FP).

Given, the total of 14 *technical factors* is 38, fill up the following table and calculate the final FP estimation.

(Note: Round the estimated count at 2 precision points, and the FP count at 0 precision points.)

(4 marks)

Information domain value	Optimistic	Most Likely	Pessimistic	Est Count	Weight	FP Count
Num of simple inputs	7	7	9			
Num of simple outputs	4	5	7			
Num of average inquiries	3	5	6			
Num of complex files	3	4	7			
Num of average ext interfaces	2	4	6			

Component	Level of complexity		
	Simple	Average	Complex
Num of inputs	3	4	6
Num of outputs	4	5	7
Num of inquiries	3	4	6
Num of files	7	10	15
Num of ext interfaces	5	7	10

- b) Data flow diagram (DFD) can be used to show how to transform input data into useful information.

Illustrate THREE (3) issues to avoid with regards to *data stores*.

(6 marks)

Continued...

QUESTION 5

- a) *Holmes has just started working at an IT security company, DetectME. Holmes is able to negotiate working hours with his supervisor as long as he works 8 hours a day, for example he can start work at 12pm and finish work at 8pm. He is also always encouraged by his supervisor to think outside the box and try new methods of breaking an IT system. Although he is a new staff, he has already received a sizeable bonus because he was able to find a particularly obscure flaw in a customer's IT system.*

Given the above scenario, identify THREE (3) characteristics of *organization culture* that is being exhibited and justify your answer.

(6 marks)

- b) There are three methods of integration; vertical, horizontal and star.

i) Explain vertical integration.

(2 marks)

ii) Provide an example of vertical integration and justify your answer.

(2 marks)

End of Paper